

REMARKS

Claims 12-26 are pending in the present application. Applicant has amended claims 12 and 22 to correlate the recitation of the amount of graphitizable carbon present with the language of the specification. Support for the amendments to claims 12 and 22 is found at p. 8, lines 16 – 17 and p. 13, line 6 of the specification. No new matter has been added to the amended claims. Reconsideration of the claims is respectfully requested.

CLAIM REJECTIONS

35 U.S.C. 112 rejection

The Examiner has rejected claims 12-26 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Examiner asserts that the claims recite a specific percent content of graphitizable carbon that is not supported by the specification.

In response, claims 12 and 22 have been amended to reconcile the claim language with the percent content of materials stated in the specification. The claims as amended refer to an amount of graphitizable carbon that is produced by a positive amount up to 15% by weight of a graphitizable carbon bonding precursor. Support for this amount of graphitizable carbon bonding precursor is found at p. 8, lines 16-17 of the specification. It is disclosed, at p. 7 line 28 of the specification, that the carbon bond precursor leads to the carbon bond of the product of the present invention. The limitation on the amount of graphitizable carbon precursor is therefore also a limitation on the amount of graphitizable carbon. It is disclosed, on p. 5, line 7 and on p. 13, line 6 of the specification, that the carbon in the filter may be in graphitizable form.

For these reasons the rejection of claims 12-26 under 35 U.S.C. 112 is believed to have been overcome.

35 U.S.C. 102/103 rejections

The Examiner has rejected claims 12 - 21 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 5,690,161 to Daussan in view of U.S. Patent No. 5,785,851 to Morris et al. and U.S. Patent No. 5,520,823 to Jones. The Examiner cites Daussan as teaching a filter device comprising a protruding frame joining a plurality of sieve plates to define a reservoir chamber. The Examiner cites Jones as teaching a bonded network of graphitized carbon in a positive amount up to 15% by weight. The Examiner cites Morris as teaching a filter device with a plate including a corrugated surface.

However none of the cited references teach, or make obvious, a filter comprising a network of bonded carbon, wherein graphitizable carbon is present in an amount produced by a positive amount up to 15% by weight of a graphitizable carbon precursor. The Jones filter is structurally different from the filter of the present invention. Jones discloses (col. 2, lines 10-16; also col. 3, lines 7-13) a filter in which the other materials present are “dispersed in a substantially amorphous matrix of borosilicate glass.” The filter of the present application, though it may contain glassy materials, does not employ them as a matrix material. The present specification refers to a carbon-bonded matrix. The present claims are directed to a carbon bonded filter, and have been amended to recite the use of a carbon bonding precursor. Jones does not teach the use of a carbon bonding precursor. Graphite does not act as a carbon bonding precursor. Borosilicate glass cannot act as a carbon bonding precursor.

This difference in matrix materials is exhibited in the properties of the resulting filters. The Jones filter makes use of borosilicate glass as the bonding material, and is thus a glassy filter. As is noted in the current specification, glassy bonded filters exhibit the drawback of cracking due to thermal shock. The use of a non-glassy material as the matrix in the present invention avoids this drawback.

The present application makes reference to both a graphitizable and a graphitized product. It has been found that the disclosed process yields a product that is best characterized as graphitizable. Nevertheless, the disclosure enables one skilled in the art to produce a filter containing a carbon-bonded ceramic filter, as is recited in the specification and in the currently presented set of claims. A patent is granted to a product or process, not to its characterization. The explanation proposed for the filter’s properties at the time of filing (i.e., the likelihood that the carbon-bonded network was composed of graphitized carbon) does not render the process of its formation, or the product formed thereby, unpatentable.

For these reasons, the rejection of claims 12-21 over Daussan in view of Morris and Jones is believed to have been overcome.

The Examiner has also rejected claims 22-26 under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 5,520,823 to Jones in view of U.S. Patent No. 5,690,161 to Daussan and U.S. Patent No. 5,785,851 to Morris et al. The Examiner asserts that Jones teaches a method for producing a filter device comprising a bonded network of graphitized carbon. The Examiner

cites Daussan as teaching a filtering device comprising a protruding frame joining a plurality of sieve plates, the protruding frame and sieve plates defining a reservoir chamber with the plates joined by a binder. The Examiner cites Morris as teaching a filter device with a plate including a corrugated surface.

Jones teaches the following (col. 2, lines 10 – 16):

According to the invention there is provided a filter for the filtration of molten light metals comprising a reticular foam formed from a composition comprising graphite, wollastonite, silica and a glass characterized in that the filter consists of a crystalline phase comprising graphite and wollastonite dispersed in a substantially amorphous matrix of borosilicate glass.

In the Jones filter, the matrix is borosilicate glass. The procedure taught by Jones cannot produce a carbon bonded network because Jones teaches the use of graphite, and graphite is incapable of forming the carbon bonded network of the filter of the present invention. Jones teaches the graphite as being dispersed in the matrix rather than being a matrix-forming material.

Graphite is not graphitizable carbon. The use of graphite does not teach or suggest the use of graphitizable carbon.

Graphite is not graphitizable carbon precursor. The use of graphite does not teach or suggest the use of graphitizable carbon precursor.

Jones does not teach or suggest a filter that contains graphitizable carbon.

Jones does not teach or suggest a filter containing graphitizable carbon produced from a positive quantity, less than 15%, of graphitizable carbon precursor.

The claims of the present application are directed to a filter containing graphitizable carbon produced from a positive quantity, less than 15%, of graphitizable carbon precursor.

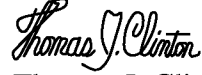
For these reasons, the rejection of claims 22-26 over Jones in view of Daussan and Morris is believed to have been overcome.

Applicant respectfully submits that claims 12-26 are patentable over the prior art. Early and favorable action is earnestly solicited.

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Vesuvius
250 Park West Drive
Pittsburgh, PA 15275
(412) 429-1800 x6921, (412) 429-3448 fax
thomas.clinton@us.vesuvius.com

Respectfully submitted,


Thomas J. Clinton
Reg. No. 40,561